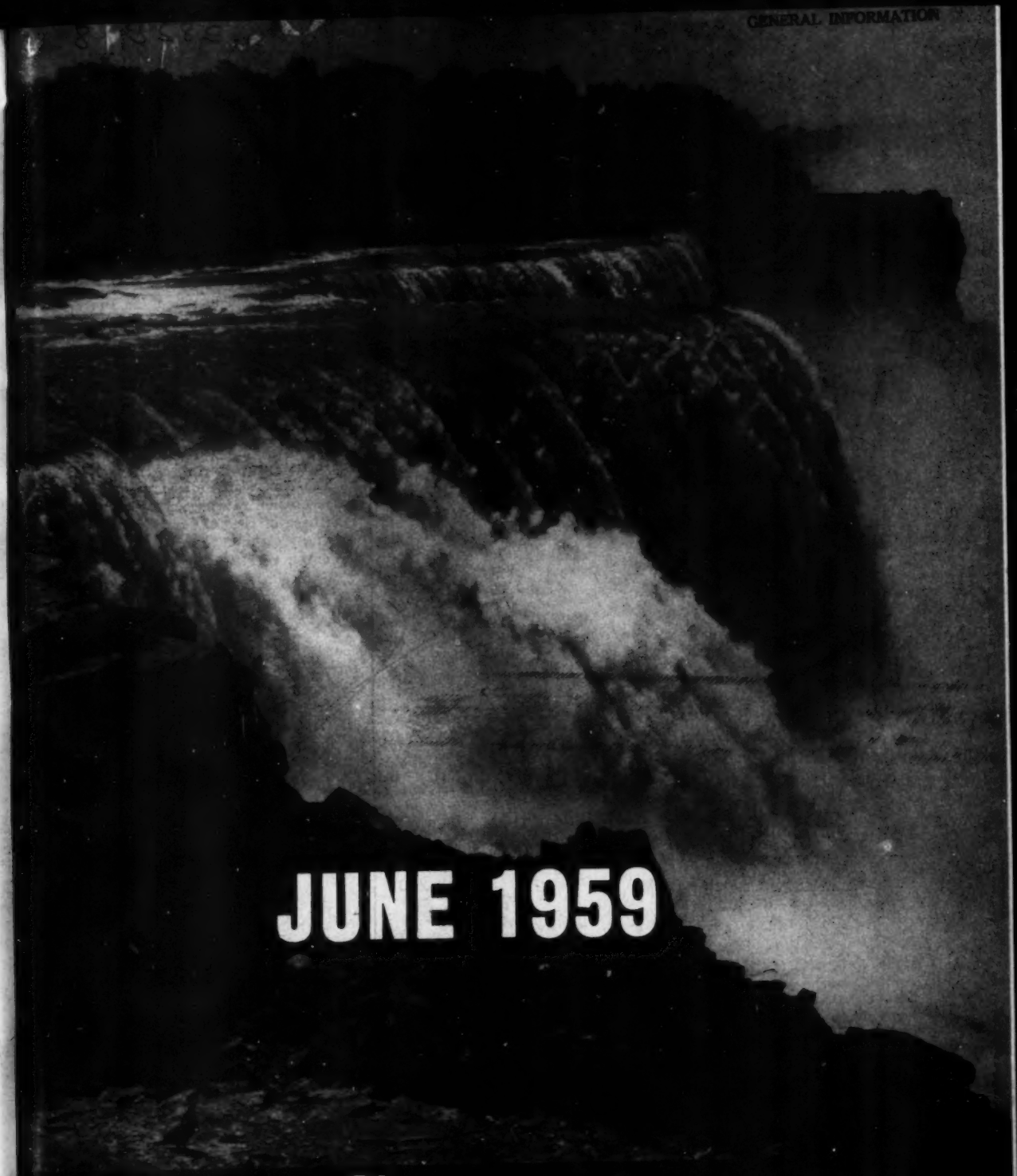

JUNE 1959

SOIL CONSERVATION

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★ THIS MONTH ★

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TOM DALE, Editor

SOIL CONSERVATION is published by direction of the Secretary of Agriculture as administrative information required for proper transaction of the public business. The printing of this publication has been approved by the Bureau of the Budget, June 26, 1958. SOIL CONSERVATION supplies information for workers of the Department of Agriculture and others engaged in soil conservation.

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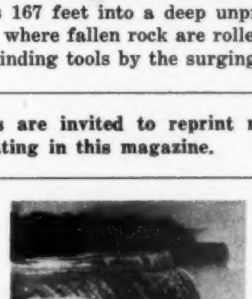
NIAGARA FALLS.—Water that drains from the Niagara River and the Upper Great Lakes rushes over the falls at the water volume rate of approximately 15 million cubic feet per minute, making it one of the most important water power areas in the world. At present, its kilowatt power is 165,000. The New York Power Authority is planning to install a capacity of 2,190,000 kilowatts in the next few years.

The American Falls have a negligible rock erosion rate because rock debris at the base of the falls acts as a buffer by giving protection to the supporting strata of softer rock.

Horseshoe Falls on the Canadian side, which carries 94 percent of the total volume of the water, has an erosion rate of 2.2 feet per year. The surface layer is hard Niagara limestone while the lower strata are the softer shale and sandstone. These give way because of the grinding and undercutting action of the water as it falls 167 feet into a deep unprotected hollow where fallen rock are rolled about like grinding tools by the surging water.

Editors are invited to reprint material originating in this magazine.



FRONT COVER.—View from the American side of Niagara Falls. Goat Island is seen in background.

Photo by Mildred DiSalvo

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Hydrology In Soil and Water Conservation

By R. G. ANDREWS

This is the first of a series of articles that attempt to explain, in nontechnical terms, the duties, responsibilities, and methods of Service hydrologists.

THE Soil Conservation Service, in carrying out its varied responsibilities, must employ a great variety of professional people. This is necessary to cope with the wide range of problems encountered. These Service employees cannot work independently in their specific fields. They must blend the knowledge of the numerous sciences involved in the development of comprehensive soil and water programs for individual farms and ranches, small watersheds, river basins, and other problem areas.

To do their work effectively it is also necessary that the various specialists have a general understanding of each other's fields, if they are to work together in accomplishing a common objective.

Among the specialists employed by SCS are a group of hydrologists. They are not as numerous as the agronomists, agricultural engineers, civil engineers, soil scientists, and some other categories. Yet, they are essential members of the team, especially where water problems are involved.

The science of hydrology is as old as the Pharaohs and as new as the supersonic jet-propelled bomber. The granaries of Egypt were dependent upon ancient hydrologists to predict the date of overflow and the height of floodwater each season on the Nile.

Nineteenth and early Twentieth Century engineers working in the field of water conservation and control, relied upon years of experience and observations of the effects of rainfall and flowing water for the design of their works. The Congress provided the foundation for the systematic collection of hydrologic data when it authorized the organization of the U. S. Weather Bureau and the Surface Water Branch of the U. S. Geological Survey. The data assembled by these agencies provided the framework around which engineers slowly began the development of a science.

Adolph Meyer's book, "Elements of Hydrology" was published in 1928. This was one of the first attempts to collect into one volume the hydrologic principles and equations known that were in general use at that time. At the close of World War II, many water conservation and control projects were being planned and a deluge of hydrology papers and books were written by numerous engineers.

Some of the authors were primarily concerned with uncovering the fundamental principles of hydrology. Many were primarily concerned with developing working tools in the form of approximate equations and families of curves that could be used by personnel with limited experience for the solution of specific problems. The working tools so developed, multiplied the output of experienced engineers but required close supervision of less experienced engineers to prevent the use of the equations and curve families beyond their range of accuracy.

Meyer defined hydrology as "the science which treats of the phenomena of water in all its states; of the distribution and occurrence of water in the earth's atmosphere, on the earth's surface, and in the soil and rock strata; and, of the relation of these phenomena to the life and activities of man." If a few moments' reflection is given that definition, it becomes evident that a working knowledge of meteorology, geology, soil science, plant physiology, ecology

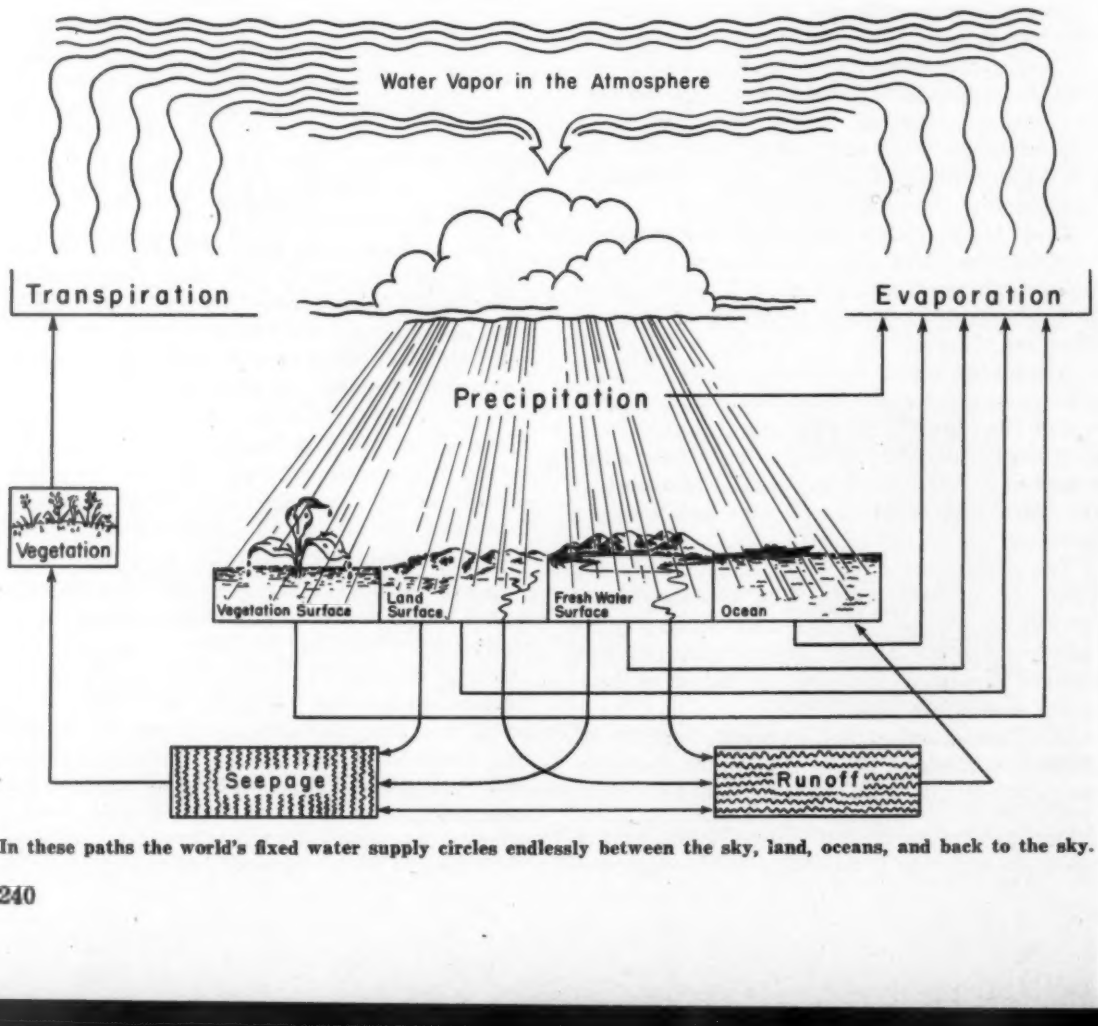
Note:—The author is head, central technical unit, Soil Conservation Service, Beltsville, Md.

of the soil, hydraulics, mathematics, including statistics, and economics is implied.

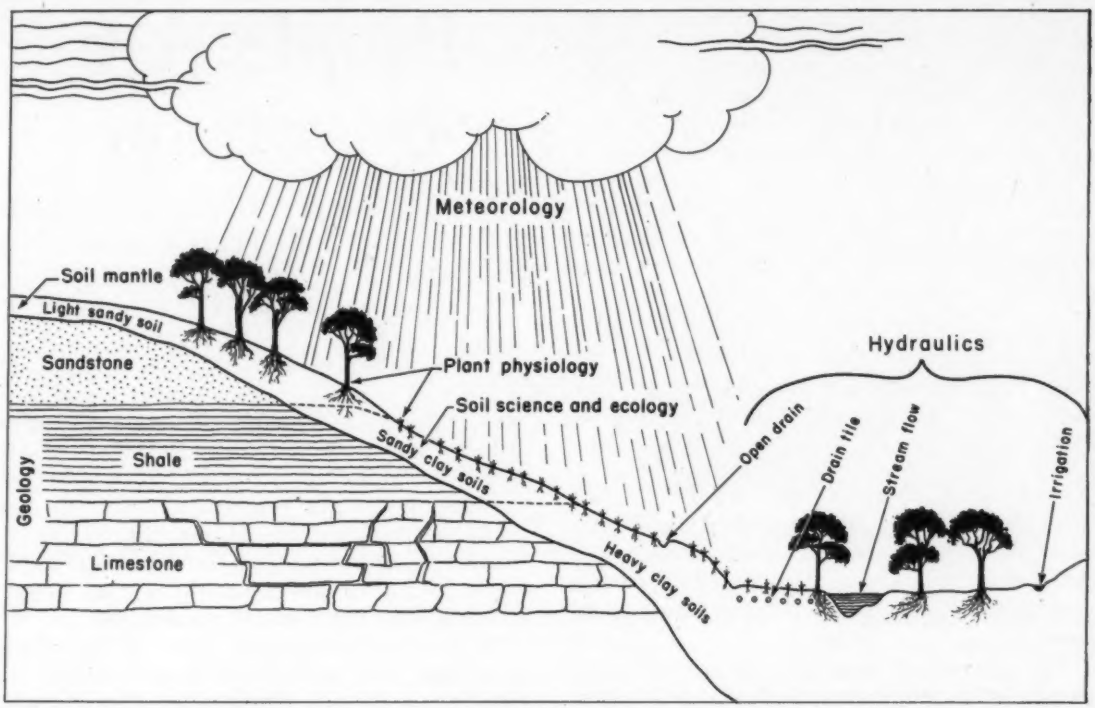
Little or no hydrologic data are directly applicable to many of the projects we undertake. Therefore the hydrologist must use his knowledge of atmospheric behavior in order to obtain the best possible answer to our hydrologic problems. For example, excessive rates of precipitation are made possible by the cooling of warm, moisture-laden air. This cooling may be produced by the southern advance of a cold front, the northern advance of a warm front, the lifting action of mountains, or the passing of a tornado or hurricane. Each method of cooling produces characteristic rainfall patterns that are generally, but not exclusively, associated with geographic areas of the United States. Likewise, the use and loss of water through transpiration and evaporation are functions of the intensity of the sun's rays that reach the surface of the earth, which is almost wholly governed by the water vapor in the atmosphere. The wind movement also determines, in part, the rate at which the processes proceed.

The hydrologist must be thoroughly familiar with the climatic peculiarities of his assigned area to properly evaluate, interpret, and use the data collected by the U. S. Weather Bureau and the Surface Water Branch of the U. S. Geological Survey.

The texture and structure of the soil, which governs its ability to admit, retain, or transmit water, is a constantly changing variable. The geographic changes are due to the interaction of the climate and the geology of the area. The changes that occur with the passing of time are due to the action of soil bacteria, the other soil organisms, the vegetation, and the effect each



In these paths the world's fixed water supply circles endlessly between the sky, land, oceans, and back to the sky.



Hydrology is a broad science drawing on many related fields and the basic sciences for much of its data and theory.

has upon the other. The texture of soils that are formed in place is directly related to the underlying rock, shale, clay, sand, or other material from which it was developed. The depth and porosity of the underlying material often governs the rate at which water storage space in the soil becomes available.

Soil structure is intimately related to the physiology of the native vegetation and the relationship of that vegetation to the microscopic plant and animal life in the soil. This delicate relationship can be encouraged or almost completely destroyed by the activities of man.

Annual plants die at maturity or with frost and leave a litter of plant debris to protect the soil surface from the puddling effect of raindrops, and leave roots to furnish food for the soil organisms. Perennial plants annually shed varying portions of their top growth, which is incorporated into the surface soil by the activity of the soil bacteria, mites, and worms. Their roots probe even deeper into the soil for plant food and to furnish support for the increasing top growth. The constant pruning of the top growth and expansion of the root system to maintain the delicate balance between root and top development, provide channels for the passage of water and food for the minute soil organisms.

Many soil organisms secrete a waxy substance which causes the particles of fine-textured soils to stick together. The water-stable aggregates thus formed produce a coarsening of texture which increases the rate at which water can pass into and through fine-textured soil. The soil texture and structure, the vegetation, and the plant residue within and on the surface, the activity of the soil organisms, and the activities of man must be given their proper consideration by the hydrologist in determining the relationships of rainfall and runoff. Properly trained, and with sufficient experience, he is able to compute with reasonable accuracy the infiltration rate, permeability, and water-holding capacity of a watershed from data obtained during a visual examination of the geology, soils, vegetation, and the activities of man.

Hydraulics, which is often considered a separate field of engineering, is a very important segment of hydrology. Water in motion can scarcely be divorced, in our thinking, from the quantity of water. The hydrologist (hydrologic engineer is a more appropriate classification) must be well versed in the laws that pertain to fluids in motion and is often required to solve complex problems concerned with the flow of water in natural or manmade open channels or closed conduits.

Hydrology has not developed into a science which is capable of precisely evaluating the effect of all the variables encountered. It is the hydrologist's responsibility to develop limited relationships through the statistical and computative analysis of large quantities of experimental and observational data. Empirical equations, curve fitting, nomography, probability, error of estimate, levels of significance, and confidence limits are as familiar to the competent hydrologist as they are to the research scientist.

The science of hydrology is not generally thought of as being concerned with the economic aspects of a program. However, the practicing hydrologic engineer must be ever alert to installation costs, annual costs, replacement costs, and maintenance costs. The economic feasibility as well as the success or failure of a structure may very well be determined by the care he uses in the selection of the storms for computing the installation, maintenance, and replacement costs and the proper functioning of a structure. The hydrologist must be assured that a proposed structure will accomplish the desired purpose and that satisfactory control cannot be obtained by more economical methods or structures.

The science of hydrology reaches to the very roots of soil conservation. The excess or deficiency of water affects directly or indirectly every farm plan and watershed plan prepared in cooperation with the Soil Conservation Service. Although an SCS farm planner may not consider himself a hydrologist, nevertheless, he must use his knowledge of hydrology, as well as that of soil science, agronomy, forestry, and other specialized fields in making decisions that go into the development of a farm or ranch plan.

People Are Important

The Oklahoma Association of Soil and Water Conservation Districts Features People in Most of Its Activities and Projects.

By RAY WALKER

JUDGE Lavern Fishel, president of the Oklahoma Association of Soil and Water Conservation Districts, contends that people are the most important resource available to district governing bodies to get the job done. "When people are properly informed and motivated, the conservation job will be done sooner and will stay put," Fishel emphasized.

What Fishel said, and what he has been practicing, has been the guiding principle of Oklahoma's 87 soil conservation districts and the State association for a long time.

The Judge put additional emphasis upon a condition that is becoming more important than ever before, "Our various programs are grow-

Note:—The author is State Conservationist, Soil Conservation Service, Stillwater, Okla.

Officers of the Oklahoma Association of Soil and Water Conservation Districts: (seated) Lavern Fishel, president; (standing—left to right) Hugh Green, vice president, Walter Sears, vice president, and Harral Allen, national councillor.

Jerry Case of the Marland chapter, who won the State FFA speaking contest, has just finished his address to the State Association of Soil and Water Conservation Districts. Joe Scott, president of Bankers Service Life Insurance Co., standing near Jerry, is about to present the $50 award to the winner of the speaking contest.

ing so fast that SCD governing bodies must make effective use of every tool available if the people are to be kept current regarding progress and objectives."

To prove his point, the judge mentioned the Great Plains Conservation Program, the Small Watershed Protection Program, the Rural Development Program, the Conservation Reserve of the Soil Bank—all relatively new. In addition we have the already going programs such as Agricultural Conservation Program, flood prevention, and the regular district program of assisting operators to plan and apply needed conservation measures in accordance with the capabilities of the land.

Add to the 87 SCDs, the 60 watershed associations and conservancy districts, cooperating municipalities, civic and farm organizations, and the State and Federal agencies actively participating in the various soil and water conservation programs in the State and it is easy to see that a lot of active people are needed to keep things going properly.

To meet this challenge and to achieve their objectives, officials of the Oklahoma Association of Soil and Water Conservation Districts are making effective use of leadership and organized groups that reach into every community.

Since 1942, the Oklahoma Bankers Association has given Certificates of Award to SCD cooperators who completed and properly maintained the conservation measures planned for their farms. About 6,000 farmers and ranchers have received these awards.

The 360 FFA chapters of the State have been participating in the FFA-SCD Soil Conservation Contest for 4 years. The SCD governing bodies encourage the FFA chapters to sponsor speech, poster, essay, and land and grass judging contests in their local communities. Bankers Service Life Insurance Company of Oklahoma City puts $7,500 into this program annually. Last year, 302 chapters, involving 12,000 FFA

Lavern Fishel presents former Governor, Raymond Gary, with a plaque in appreciation for "all the good things" the governor did for flood prevention and soil conservation districts during his term of office.

members, participated in the contest and helped their local districts.

For several years, the Association of Electric Cooperatives has devoted a full page in their official publication, *Oklahoma Rural News*, to inform their membership concerning Oklahoma's program of soil and water conservation Circulation of *Oklahoma Rural News* exceeds 100,000 copies.

Last year (1958), Fishel and his coworkers developed a plan for closer work with the 267 newspapers of the State. Oklahoma SCDs were grouped according to the number of newspapers published in each district. There were five groups averaging from 14 to 26 districts in each group.

Districts are judged on the basis of number of stories and items featuring soil conservation district activities and column inches of space used in publicizing the district's program. Points are given for pictures, feature stories, editorials, full-page ads, and special editions featuring the SCD program.

Awards are given by the Oklahoma Press Association to the SCD winning first in each group. These plaques are given during the annual meeting of OASWCD.

"Our newspapers have been an important ally of districts all along, but this is the first time that the newspapers and districts have "teamed-up" at the local and State levels to do a more effective job of informing and motivating the public," Fishel stated.

In Oklahoma, SCD supervisors have encouraged the organization of ladies auxiliaries. Auxiliaries now are active at local, area, and State levels. Mrs. Paul Mungle, first president of the State auxiliary, pioneered this work. Her successors, Mrs. Cliff Thurman and the present State President, Mrs. A. H. Riney, have increased auxiliary activities. Fischel credits the ladies auxiliaries with interest and participation in observance of Soil Stewardship Week, sponsoring more and more essay and poster contests among school children, and effectively cooperating with the garden clubs and home demonstration clubs of the State.

There are many excellent examples of the districts working effectively with towns and cities in treating watersheds of municipal water supplies, providing additional storage in flood detention structures to provide an adequate water supply for urban people, and working with civic clubs to observe Farm-City Week and other activities that help to speedup the conservation job.

Perhaps one of the main reasons why more and more of the leadership in the State becomes active in working with districts, is because district supervisors are quick to give public recognition to individuals helping districts do an important conservation job. This program of recognizing persons meriting the honor has been carried out for years at local and State meetings.

However, the granddaddy of all awards meet-

Lieutenant Governor George Nigh addresses the supervisors and guests at the annual meeting of the OASWCD.

ings is the luncheon and annual dinner of the State association. At these events, individuals and representatives of organizations are given plaques and certificates before large and appreciative audiences. "Because of the coverage of these events by representatives of press, radio, and television, these presentations, take on added significance," Fishel declared.

Because OASWCD majors on people, and large numbers of people attend the annual meetings, representatives of the Congress and high officials of all branches of State government attend. At this year's annual dinner, one of Oklahoma's Congressmen, Representative Tom Steed, was the featured speaker. Lieutenant Governor George Nigh talked at the luncheon, and more than 50 members of the Oklahoma Legislature were guests of their local SCDs at the annual banquet.

"Yes sir! In Oklahoma we believe people are important," the Judge declared with an air of finality.

SOD-BASED ROTATIONS FOR EROSION CONTROL

By A. P. BARNETT

No. 46

This is the forty-sixth of a series of articles to appear from time to time in explanation of the various phases of research being conducted by the Department of Agriculture on problems of soil and water conservation.

A ROTATION is said to be sod-based when a sod-forming cover crop is used regularly in the rotation cycle. A choice of other crops then completes the cycle.

Sods are introduced into rotations for three principal reasons: (1) to reduce soil and water losses during their period of growth; (2) to increase water intake after the sods have been broken out and turned under; and, (3) to improve soil productivity. Sod-based rotations are especially well adapted for use on many sloping cropland fields where the control of runoff and erosion is a serious problem.

Sod-based rotations are an effective soil and water conservation measure when used with an adequate water disposal system. They virtually eliminate soil movement within a terrace interval and reduce surface runoff greatly.

Sod-based rotations were first established on runoff plots at the Southern Piedmont Conservation Experiment Station, Watkinsville, Ga. in the fall of 1952. Grass was grown, usually in combination with adapted legumes, for 2 years and was then plowed out and followed for 1 or 2 years by row crops of cotton or corn. These studies were among the first true grass-based rotations set up in the Southeast.

Runoff and soil losses have been measured at the Watkinsville station for almost 20 years under a variety of cropping systems on several slopes and soil conditions. During that time, cotton was grown continually on Class III_e Cecil soil, which had a slope of 7 percent and slope

Tall fescue sod, such as this, reduces runoff and erosion during the following year even though the land is planted to a clean-tilled crop.

Note:—The author is agricultural engineer, soil and water conservation research division, Agricultural Research Service, Watkinsville, Ga.

length of 70 feet. The plots were moderately well-fertilized and planted on the contour with terraces spaced 70 feet apart. The average annual runoff loss was 22 percent of the rainfall, while 21 tons per acre of soil was lost, though these amounts varied widely from year to year. At this average rate, the soil to plow depth (about 7 inches) would be washed away in 50 years.

The variation in annual runoff and soil loss was not due to a great variation in the total amount of rainfall, but rather to the number and severity of thunderstorms. Three-fourths of the average annual soil loss occurred during the spring and summer when thunderstorms were most frequent and severe. Since the principal erosion hazard exists during the spring and summer, that is the period when sod-based rotations will offer the most protection to the land if runoff and soil losses are to be substantially reduced.

Ordinarily, it would seem a sod crop should not protect the land after the sod has been turned under and killed in order to grow the succeeding row crop; however, this is actually what happened. When a 2-year old sod of tall fescue was turned under ahead of corn on average Piedmont land, both runoff and soil loss from the corn were almost eliminated.

Fescue roots and tops on the surface, following two harrow operations, still provide a good mulch for the following clean-tilled crop.

To date, results have been highly significant. Two thunderstorms in July 1958, illustrate this point. These storms, which came just 1 day apart, caused over 10 tons of soil loss per acre from continuous cotton plots on Class III_e land, and the runoff was 43 percent. This was half of an average year's total soil loss. These were storms of the kind that can be expected every summer. Soil loss for these storms from corn following 2 years of fescue sod was only 0.2 tons per acre, and only 8 percent of the rainfall was lost as runoff. During these storms, the second year of row crops following 2 years of sod had a soil loss of 2 tons per acre and runoff of 22 percent.

Summary of Runoff and Soil Losses from Class IIIe Land during the July 8-9, 1958 Storms.

Cropping Treatment	Runoff percent	Soil Loss tons per acre
Continuous Cotton	43	10.86
3-Yr. Rotation Average	7	0.16
1st Yr. Fescue	5	0.21
2d Yr. Fescue	7	0
Corn	9	0.28
4-Yr. Rotation Average	10	0.64
1st Yr. Fescue	8	0.37
2d Yr. Fescue	2	0
Corn	8	0.16
Cotton-Fescue	22	2.01

It is important to note that even though these second year row-crop losses are small, they represent a great increase when compared with the first row crop after sod. This emphasizes the fact that the erosion control effectiveness of sod has begun to deteriorate in the second year and suggests that an attempt to grow 3 would not be a good conservation practice.

These few facts illustrate graphically the years of row crop after sod on Class III_e land high degree of protection or "the erosion control effectiveness" of sod during the row-crop phase of a rotation. The effectiveness of sod in the control of runoff and soil loss in the succeeding row crop is due in part to the following factors: (1) More than 12 tons per acre of dry plant material (tops and roots to plow depth) will be incorporated into the soil when a good stand of fescue sod is turned under.

Other grass sods of similar density and durability may be expected to provide similar protection. (2) After an average of two harrow operations, fescue roots and tops provide a good surface mulch to cushion raindrop impact, resist erosion, and reduce runoff. (3) By season's end, much of the fescue residue remains undecomposed, both on the surface and in the soil. This material, because of its slow decomposition rate, is effective for a longer period in the reduction of runoff and soil loss than legume crops such as annual lespedeza. The visible plant residue of annual lespedeza sods disappears by the end of the first row-crop growing season.

Although these studies have been in operation for only a few years, these years have been nearly average with respect to soil losses, hence, it is felt that these data are indicative of long-term results.

With acceptance of grass sods in rotation with row-crops in Southeastern agriculture, several important implications appear. Through the wise use of grass, steeper slopes may be cultivated safely. The number of years of row crops after sod may be increased above current recommendations. Water yields for irrigation and livestock ponds may have to be reevaluated as marked reductions in runoff are effected by sod-based rotations.

New Uses For Sericea

Meal Pellets for Cattle and Swine Feed as Well as Pasture for All Kinds of Livestock and Poultry are Among the New Uses for Sericea Lespedeza Developed by a North Carolina Farm.

By W. O. LAMBETH

THE McNair Farms of Laurinburg, N. C. have more than 2,000 acres of sericea lespedeza which they are using very effectively in their livestock and poultry programs.

Sericea was introduced into Scotland County by the Soil Conservation Service about 15 years ago to help control wind and water erosion on deep sandy slopes. For some time little use was made of these plantings, except for erosion control.

During the dry years of 1951-54, summer forage for beef cattle on the McNair Farms became scarce. K. J. Shaw, farm manager, looked over the sericea fields and found good growth in spite of the drought. He fenced in several hundred acres and turned in the beef cattle herds.

Shaw, who is a district supervisor in the Pee Dee–Cape Fear Soil Conservation District, found that the cattle not only liked the sericea, but that they did well and gained in weight.

"After that," he says, "it was easy to see why sericea became our primary grazing crop during the summer months. Now it is not unusual to graze our cattle on it from mid-April until frost, usually about November 1.

"Then," Shaw continued, "we found that it could be grazed very satisfactorily by hogs and turkeys."

Soon thereafter, Mr. E. Harvey Evans, president of McNair Farms, and Shaw became convinced that sericea—a plant well-adapted to

Turkeys grazing on sericea lespedeza on the McNair Farms.

Note:—The author is area conservationist, Soil Conservation Service, Lamberton, N. C.

A trial planting of nematode resistant sericea lespedeza on the McNair Farms.

their light sandy soils—offered other possibilities as livestock and poultry feed.

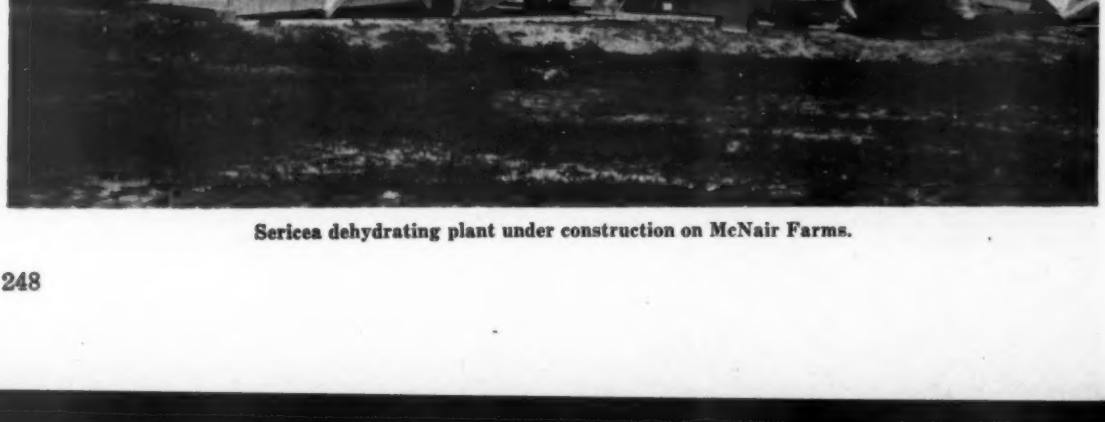
At first, it had been used only as an erosion control and land building plant. Later they had used it for hay and grazing. Now they wondered if this plant, which grew so well on poor land under droughty conditions, could be used in other ways. Possibly it could be substituted for alfalfa, a crop they had never been able to grow successfully.

In July 1956, they cut two truckloads of sericea and dehydrated it. From one acre, 6,480 pounds of green, chopped sericea produced 1,950 pounds of meal with 7.17 percent moisture. This meal had the following chemical analysis: 4.05 percent fat, 15.19 percent protein, and 24.70 percent crude fibre. It also had 92.62 milligrams of carotene, equivalent to 154,367 international units of vitamin A, per pound. The sericea was cut from a field that had been mowed once for hay and averaged 10 to 12 inches in height.

Another load cut in a different field and averaging 12 to 15 inches in height was dehydrated and the analysis was about the same. This meal was fed to dairy and beef cattle in the winter of 1956. The cattle readily ate the meal and made normal gains.

In 1957 similar tests were conducted. This time one cutting was made on an old stand that had not previously been mowed. This sericea averaged 3 feet in height and proved to be very woody with 37.90 percent crude fibre. From these tests it was evident that the sericea should be cut when young and tender to make the best quality meal.

If there had been any doubt in the minds of McNair Farms officials as to the future of seri-



Sericea dehydrating plant under construction on McNair Farms.

K. J. Shaw, farm manager, inspects a steer fattening ration that is about 50 percent chopped sericea lespedeza hay.

cea as a livestock and poultry feed, these experiments soon removed them. In mid-1958 they began erecting a modern dehydration plant and pellet mill. Their process is simple. Field chopped forage is fed into a large dump truck, hauled to the dehydration plant where it is transferred by automatic feeders to the dehydrator.

The dehydrator itself is a large rotating drum into which oil heat is forced at temperatures ranging from 1800° to 2200° F. At this temperature the forage is dried to 10 percent moisture in about 3 minutes. The dried material is conveyed to a hammermill and on to the pellet machine. It is then stored in tanks with an inert gas to prevent loss of valuable vitamins.

The present dehydrator can produce 1½ tons of dried material an hour and plans are to operate it 20 hours per day during the growing season. The plant was designed for the installation of a second dehydrating unit at a later date.

McNair Farms have 200 acres of coastal Bermudagrass which they plan to use for meal production. Similar chemical anaylses have shown the meal to be high in protein and vitamin A, important supplements in beef and swine production.

Both Evans and Shaw are firm believers in the fact that the Southeast, through the use of sericea and other adapted forage crops, can produce high-quality beef as cheap or cheaper than any other section of the United States.

"We can easily produce 3 tons of sericea hay per acre per year on land that formerly produced 200 pounds of lint cotton," says Shaw. "This year with the rains that fell we needed five times as many cows as we had to keep the sericea down."

As evidence of their faith in the use of sericea in the livestock industry, they have for 8 years been carrying on a research program. Their research staff has developed sericea plants which are highly resistant to root knot, have more leaf area, less woody stems, and a lower tannin content than common varieties.

Officials of McNair Farms have a feeling that they are pioneering the way for a new agricultural industry in the South—an industry that may discover other uses for a plant long-recognized by soil conservationists as invaluable in the field of conservation.

Farmer Sinks New Roots

Uprooted by the Rurbanization Movement in Massachusetts, a Farmer Moves to Maine and Again Starts a Profitable Truck Farming Business.

By DELBERT L. MOODY

FOR years, John S. Crosby was a contented and prosperous truck farmer at Arlington, Mass. He took pride in his family's farming record. He was the third generation to farm the same place.

Crosby was content to stay put. But "rurbanization" finally squeezed him out of Arlington, once the State's biggest truck-growing area. Suburban housing, a school, and a playground nibbled pieces out of the original 28-acre truck

Note:—The author is work unit conservationist, Soil Conservation Service, Springvale, Maine.

farm. When only 6 acres remained, Crosby gave up. He sold out and moved to Maine.

In the early spring of 1957, Crosby bought a 7-acre piece of land on U. S. Highway No. 1 near Wells, Maine. Center of a large population of "summer visitors," it was an ideal place for the wayside stand that he had in mind. When he started to prepare the land, though, he ran into his first big conservation problem. Under the surface, the land was waterlogged. It needed drainage. It needed other things, too. They included a sod-waterway to ease a brook across the field to the pond he needed for irrigation and also an outlet for his drainage system. The land needed a little clearing as some brush and a few no-account apple trees had grown up. Crosby knew that the soil would need improvement. Hay had been cut on the place for many years without anything being returned to the soil to maintain its fertility.

With all these conservation jobs needing technical attention, Crosby went to the York County Soil Conservation District for help. He signed a district agreement to apply a coordinated conservation program to his land. That entitled him to technical help from the Soil Conservation Service.

The first job was to get the land drained. So an SCS engineer laid out a drainage system, and designed a pond for it and the brook to empty into. Crosby hired a local contractor by the hour to do the work. He put in about 2,200 feet of drainage tile 3 feet deep. One line runs the length of the farm and empties into the pond. Five laterals feed into the main tile line. The contractor dug the pond with a big back hoe. The spillways of the pond empty into a culvert that goes under the highway and takes the water to a natural draw.

John Crosby (left) gives Delbert Moody a sample plant from one of his cold frames.

Summer visitors selecting berries at the Crosby wayside stand.

The tile cost $590.07. The contractor got $395.50 for digging the drainage ditches and $276 for building the pond. Crosby had the ditches filled at a labor cost of $61.25. He paid an overall helper $35 for labor. The entire work cost $1,357.82 plus Crosby's time. The Agricultural Conservation Program paid about $625 toward this cost.

These jobs done, Crosby was in business. Though late, he got a crop in and set up his wayside stand. Staying open till after Thanksgiving that first season, he took in about $2,000. In 1958 the total take jumped to $11,650. He expects to grow and have cut flowers at his stand and figures on doing even better.

Crosby had a temporary roadside stand in 1957. During the winter he built a spacious stand with a cellar. Tile under the cellar drains into the pond. The new stand can be converted readily into a cottage. His home, where he lives

with his wife, adjoins the stand.

Crosby plants about 6 acres. He raises several varieties of peas, corn, bush, pole, and lima beans, carrots, beets, broccoli, cabbage, Swiss chard, spinach, chicory, escarole, cauliflower, radishes, cucumbers, tomatoes, potatoes, summer and winter squash, parsnips, onions, cantaloupe, and pumpkins.

"The pumpkins," Crosby said, "are purely for the Hallowe'en trade. No one buys pumpkins for cooking any more. They get that in cans."

In 1958, Crosby added strawberries, raspberries, and asparagus. The berries will begin to produce this year but there won't be any asparagus until 1960.

Crosby is working to build up the soil's productiveness. The first year he spread 10 tons of lime on his 6 acres. He fertilizes with 8–16–16 using about 1,000 pounds an acre. In addition, he applies lots of manure that he hauls from nearby chicken farms. He is given the manure for cleaning out the hen houses. In the fall he plants a winter rye cover crop. In the spring he turns the rye into the soil. The rye protects his soil in winter, and adds organic matter to it in the spring.

Though he has a nucleus of local patronage, most of Crosby's business comes from the visitors who spend their summers at the nearby beach resorts.

"All these people are glad to pay a premium price for fresh produce," Crosby says. "They want quality, though, and they know quality when they see it. And they have certain tastes. Some go out of their way to get my peas. Others have a failing for escarole. And so it goes. I do my best to take care of their needs."

When the Crosbys are at church and at other times when they are too busy to attend the stand, a sign tells customers to help themselves and leave their money. "I have seldom lost a dime doing that," Crosby said.

When he has a surplus in any one vegetable, Crosby sells to a wholesaler in nearby Sanford. Likewise, if he runs short, he gets what he needs from the wholesaler.

"If it's something I haven't grown myself, I tell my customers," Crosby said. "I play fair with them. My first year I had some potatoes on the stand but I told my customers that I had bought them and that they weren't Maine potatoes. Most of them said that while they were in Maine they wanted Maine potatoes, they had heard so much about them. So since then I have grown my own potatoes."

Crosby was graduated from the Massachusetts Agricultural College in 1925. (It's now the University of Massachusetts.) He majored in economics and gardening. Both are subjects that he now puts to good use. Recently he was elected vice president of the Maine Vegetable Grower's Association.

District Finds School Site

By ALBERT E. NEWBY

BETHEL, Conn., like most other towns in Fairfield County, is growing like the proveribal Topsy. During January and February 1959, 221 applications for construction of new homes were received for just the northern end of town. Houses mean children and children mean schools. Since the town schools are now overcrowded, this building boom means a new school for the Stony Hill area.

During a follow-up visit by an SCS technician to the farm of district cooperator Dick Whittlesey, the subject of school sites was mentioned. Dick is chairman of the Bethel Planning Commission and thereby vitally concerned with the changes rapidly taking place in the town. He knew that several sites were being considered by various groups. Being a farmer, he was aware that the outward appearance of land can be very deceiving.

"Can the Soil Conservation Service help the town in choosing the best school site?" Whittlesey asked the SCS technician.

He received his answer when he attended the monthly meeting of the Fairfield County Soil Conservation District and put the same question to the board of supervisors. An immediate OK was given the SCS work unit conservationist to examine all suggested sites and report his findings to the planning commission.

Note:—The author is work unit conservationist, Soil Conservation Service, Danbury, Conn.

Checking the sites wasn't much of a job because a soils map had been prepared as part of the farm conservation plan on four of the six properties considered. A soil scientist was asked to make a quick check on the two properties not mapped. Drainage was an important consideration since Bethel has no sewage system. Approximate acreages were figured using aerial photographs.

One excellent school site, which had been overlooked by all interested groups, suddenly emerged when the soils maps were examined. It was 28 acres of flat, well-drained land with access from three town roads. A pond site existed along one side of the property. With advancing years, Mr. Fred Weed, the owner, had allowed the hedgerows to grow up to brush. This brush obscured vision from one road. A narrow, brushy, wet area along another road gave the impression that the farm was one large swamp.

A report was prepared listing the soil conditions, topography, and acreage of each site. At a joint meeting of the board of education and the planning commission, it was unanimously recommended that the Weed property be purchased. Plans call for a recreational area as well as a new school. The swamp will become a shallow pond for fire protection for the school and the surrounding neighborhood. Little Leaguers, who have recently lost their ballfield to a high school addition, can begin blasting them over the fences again.

Many townspeople are sure that the Soil Conservation Service assistance furnished through the district has saved Bethel money and heartaches. Another piece of property was the choice of the majority before the soil maps were consulted. Necessary regrading of this sloping site would have uncovered a hardpan at 3 feet. Playgrounds and septic tank drainage fields in this material are not pleasant to think about.

SNOW WINDROWS.—Kenneth Rederick of Clay County, S. Dak., uses an old road grader to grade the first big snow each winter into windrows, spaced 50 to 100 feet apart. He says, "These windrows catch most of the snow for the rest of the winter and the snow really piles up."

The moisture kept on a field by the snow windrows usually increases greatly the yields of the next summer's crop.

A Stable Great Plains Ranch

A Newspaper Reporter Becomes a Successful Ranch Manager With The Aid of His Soil Conservation District and the Great Plains Conservation Program.

By LAWRENCE D. TEDFORD

THE change from a newspaper reporter in Wenatchee, Wash., to the manager of a western Kansas cattle ranch was a big one for John Cogswell, but he made it in 1945. That was when he came back to take over the management of his mother's ranch. Farming and ranching in northwestern Kansas wasn't entirely new to him because he grew up there.

The crops were good in the early forties and ranching seemed to be a prosperous enterprise at that time. John said, "I welcomed the opportunity with faith that the country would produce, and that I could realize a good living in the livestock business."

The 15,000-acre cattle ranch is in Sherman County, about 20 miles southeast of Goodland. The north fork of the Smoky Hill River meanders through the center of the ranch and provides an abundant source of water for livestock.

The spread is made up of 13,820 acres of upland range, 352 acres of native hayland, and 407 acres of cropland. Of the cropland, 331 acres are irrigated.

The topography varies from nearly level bottom land along the river to strongly sloping rangeland.

In 1945, the year that Cogswell began operating the ranch, a raging prairie fire swept through the south, burning off nearly 12,000 acres of good native grass. It was a tough blow, but fortunately rainfall the next season was a little above normal and the grass recovered rapidly.

Cogswell, being interested in a conservation

Note:—The author is work unit conservationist, Soil Conservation Service, Goodland, Kans.

plan for the ranch, called on the Sherman County Soil Conservation District for help in November 1946. He immediately began to apply soil and water conservation practices that would help him obtain the best returns. In carrying out his conservation plan, John practices proper use and deferred grazing. He believes in not grazing off more than one-half of the annual growth of desirable grasses each year. Contour furrowing, to retard runoff, was done on 2,150 acres of rangeland. Nine acres went into tree windbreaks to protect farmsteads and feedlots from the winter snows. However, he did not install all the conservation practices that he had planned.

The cost of conservation practices applied on the Cogswell ranch was partially offset by assistance given through the ACP Program.

The test came around 1950. Cogswell was running a cowherd of 550 head when the drought moved in. The carrying capacity of the range fell off rapidly and health problems in the cattle mounted. "My education in range management began at that time," Cogswell recalls.

He gradually cut his herd down and when the big drought was at its worst in 1956, he was running only 200 heifers. The grass came back rapidly in 1957 and 1958 when rainfall increased, bearing out Cogswell's contention that sound range management during dry years pays big dividends.

"A rancher shouldn't have a cowherd any larger than he can successfully carry through a drought," Cogswell advises. "If you run a cowherd to fit the good years, more than likely you will be forced to sell the cattle on a low market when you reduce to survive the dry years."

At the present time, he is running a combination cow and steer program with his cowherd adjusted to 300 head. This program is designed to use the feed in the bountiful years, but it is flexible enough to maintain a sound program during drought periods. Cogswell is aiming towards a completely integrated program from calf to choice steer.

Nine wells produce water for his irrigated crops. The efficiency of his irrigation system was increased considerably in 1957 when he laid 3,735 feet of buried concrete pipe. This joined four of the smaller wells into one system. The power on all but three of the irrigation wells is supplied by electricity.

Corn, forage sorghum, and alfalfa are the principal crops grown under irrigation. Cogswell is a firm believer in having plenty of feed reserves. He normally puts up 1,000 tons of

John Cogswell (on horse) and Lawrence Tedford in one of Cogswell's feed lots.

silage each year. Prairie hay is used as a supplement in his winter feeding program and it makes up a large share of the harvested crops.

Some of the hayland has good stands of native switchgrass. In 1957, he harvested 2,000 pounds of seed from 10 acres.

When the Great Plains Conservation Program came into being late in 1957, Cogswell was the second one in Sherman County to sign an application. It was necessary to have a soil survey and a range site and condition survey made before all the needed conservation practices could be determined. By the following June, the Soil Conservation Service staff had assisted him in developing a complete soil and water conservation plan on the ranch. The Cogswell contract was one of the first in northwest Kansas on which practices were applied in 1958. This plan was set up to cover a 6-year period and provides for cost sharing up to 80 percent, for installing some of the conservation practices.

Under the Great Plains Conservation plan, 17,300 cubic yards of earth were moved in the summer of 1958, in the construction of stockwater ponds. Seven of the fifteen ponds planned were completed during the year. These ponds are a valuable aid in giving better distribution of grazing on the range.

In one field, a water spreading system will be installed. Runoff water will be diverted from a large draw by means of a dam and diversion onto nearly level grassland. This water will be spread uniformly by using a series of small contour ditches.

One hundred and fifty-eight acres of depleted range will be reseeded to a mixture of native grasses, including blue grama, sideoats grama, little bluestem, and western wheatgrass.

Cogswell is enthusiastic about the Great Plains program on his ranch. He says, "We can't exploit the land from year to year and expect the land to continue to support us. We can save the soil and make a living at the same time."

In 1958, John Cogswell was the recipient of the Kansas Bankers award for performing outstanding soil and water conservation practices on his ranch. He is active in community affairs, once serving as mayor of Goodland. In 1955, he represented the Farm Bureau Federation, on a tour of New Zealand and Australia.

WATER WHEN YOU NEED IT.—Until a few months ago the Spring Gulch irrigation ranchers near Jackson Hole, Wyo. knew the one thing that they could count on was that they would not have water when they needed it most.

It had been that way since the flood of 1927. That was the year the Lower Slide Lake Dam washed out after hard rains and flooded the valley below. Ditches and irrigation structures went out. After that, the river shifted from year to year. This increased upkeep and meant less water for crops than the ranchers had a right to expect.

In the fall of 1957, the water users decided to act on their problem. They all were working on complete soil and water conservation plans in cooperation with the Teton Soil Conservation District. The Spring Gulch group includes Mrs. Peter C. Hansen, Clifford Hansen, and Rod and Phil Lucas. They asked the district board for help.

The Soil Conservation Service men working with the Teton district were pretty sure the problem could be solved. It would mean building a diversion from the Gros Ventre River.

"The cost of maintenance from 1927 to the present time has doubtlessly far exceeded the cost of the new structure many times; not to mention the far greater costs in failing to have water when needed," stated Clifford Hansen.

When plans were drawn up, the group asked for ACP cost-sharing help from the Teton County Agricultural Stabilization and Conservation Committee. Since the construction site is on the lands within Grand Teton National Park, it was necessary to get permission from park officials to build the diversion.

Engineers of SCS designed the structure with four 6-foot steel headgates, and 91 cubic yards of concrete. Many truck loads of rock, 6,000 board feet of treated lumber for the main diversion core, and a 16-foot sluiceway to clear debris away from the headgate were used.

The new structure eliminates the need for yearly bulldozer work in the river channel.

With the new diversion in operation, the Spring Gulch water users not only can control their irrigation water but they also know they will get water when they need it.

—ROY H. BUCHMEIER

GROUND WATER.—Underground reservoirs of the United States contain more fresh water than all surface reservoirs and lakes combined, including the Great Lakes.

About one-sixth of all water used comes from underground sources. In many areas ground water is being used faster than it is naturally replenished. In effect, the stored water is being "mined." Water levels in wells are dropping in nearly all sections, and the irrigation projects, municipalities, and industries depending on underground water are threatened.

The Conservation Volunteer
Minnesota Dept. of Conservation

Plow-Planting Corn Saves Soil, Water, and $'s

By WILLIAM A. HAYES

MORE farmers than ever before will plant corn right behind the plow in 1959. Farmers who have had experience with plow-planting report: (1) reduced runoff and less erosion on sloping land, (2) less flooding of low areas, and (3) improved physical condition of the soil. Other advantages include a $4 to $6 per acre reduction in production costs, less power and labor, less weed competition with fewer cultivations, and increased yields.

Some people plow and plant in one operation. Others modify the operation and pull a leveling tool back of the plow, then plant in a separate operation. The latter method is more correctly referred to as "minimum tillage" than "plow-plant," since the term "plow-plant" infers that plowing and planting are done in one operation. With either method farmers eliminate costly packing operations such as discing and dragging, which contribute to increased runoff. Some compaction in the corn row is desirable in order to obtain good germination. The compacted area is attained by the use of a press wheel, shoe, or tractor wheel.

The soil between the rows is left loose to promote the intake of water. This loose con-

Note:—The author is management agronomist, Soil Conservation Service, Harrisburg, Pa.

Plow-planting, pre-emergence spray of 2,4-D, and fertilizing are done in one operation on the R. L. Cook farm near Lansing, Mich. The corn yielded 103 bushels per acre with no subsequent cultivation.

dition also reduces germination of weeds. By cutting down runoff, soil erosion is reduced and water is stored in the soil where the plant can use it later in the cropping season. Flooding of low areas is less because rainfall is trapped in soil voids where it falls, giving a more even distribution over the field. The improved physical condition of the soil is a result of the reduction in number of trips over the field with heavy equipment and fewer operations with tools that tend to destroy soil aggregates.

Experimental work of the Agriculture Research Service of USDA at Coshocton, Ohio, illustrates some of the conservation merits of plow-planting. In 1955, corn was plow-planted in one plot while a similar plot was disced several times after plowing. Both plots were planted on the contour. The disced plot lost 2,208 pounds of soil per acre while the plow-plant lost only 52 pounds of soil per acre.

In 1957, two test areas were compared. One test area was plow-planted to corn across the general slope (as close to the contour as practicable) and the other area was disced, dragged, and planted on the true contour. A record-breaking 3½-inch rain fell during this cropping season. Specialists at Coshocton pointed out that rainfall of this intensity occurs only once in 300 years.

Plow-planting at the Soil and Water Experiment Station, Coshocton, Ohio. One row is planted with fertilizer placed several inches under the seed. The corn yielded 124 bushels per acre, with no subsequent cultivation.

Runoff results during this record-breaking rain were startling. Where the seedbed was disced, dragged, and planted on the true contour, there was a maximum rate of runoff of 5.97 inches of water per hour. Where the crop was plow-planted across the general slope, the maximum rate of runoff was 3.12 inches per hour, a savings of 2.85 inches. Soil losses paralleled runoff rates, with a loss of 6.7 tons per acre, where disced and 2.2 tons per acre where plow-planted. Where disced, the corn yielded 109 bushels per acres, where plow-planted the yield was 124 bushels per acre, an increase of 15 bushels. Increased corn yield is thought to be due primarily to the moisture conserved by plow-planting.

Wheel-track planting of corn on the Ed Miller farm near Charlotte, Mich. The field was plowed only a few days before planting, with no intervening cultivation. Rows are spaced 54 inches apart; the yield was more than 100 bushels per acre. After one cultivation, the areas between rows were seeded to ryegrass for winter cover.

Soil Conservation Service personnel have reported less erosion where corn is plow-planted. However, the soil conservationists emphasize that plow-plant is not a substitute for contour farming but rather a supplement to contouring. Plow-plant shows evidence of providing effective soil and water conservation on short slopes of irregular topography. Farmers who haven't tried plow-planting corn or other row crops such as sugar beets, potatoes, or soybeans could well afford to try a strip through a field and compare the results.

Ten Tons Of Milk Daily—
—From 480 Acres

A New Mexico Dairyman Produces a Major Part of El Paso's Milk Supply by Practicing Conservation and Improved Irrigation on His 480-Acre Farm.

By HERBERT I. JONES and
Y'VONNE SOPER

PAUL BLACK has more than 1,800 quality Guernsey cows and replacement heifers that turn the lush feed crops he grows into a large portion of El Paso, Texas' milk supply. He has installed every practical soil and water conservation practice on his 480 irrigated acres and has put every acre of his spread to its best use. He finds time besides to work as a leader in activities of his community.

Black started farming 25 years ago with 35 common cows and 60 acres of bosque brush pasture. "Anything we could get was good enough," he recalls.

Black located in the Hatch section of the Rio Grande Valley nearly 200 miles south of Albuquerque, N. Mex., and 100 miles north of El Paso. Irrigation then was just in its infancy, compared to the present.

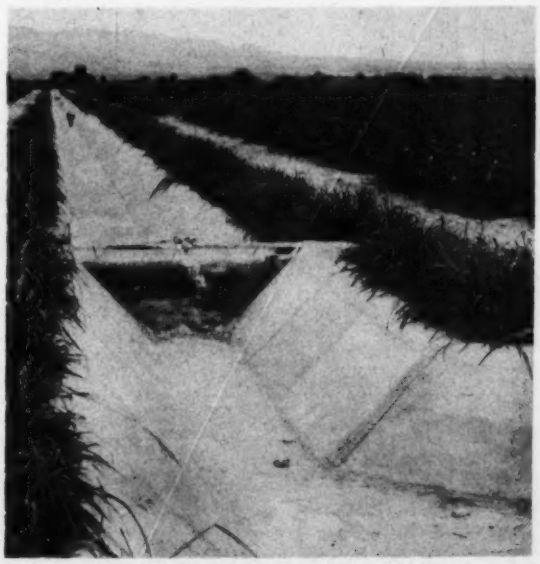
It's hard to imagine, today, that much of Black's acreage was once covered with catclaw, mesquite, cottonwood, and cresote bush. But it's true. Altogether, over the years, Black has converted acres and acres of this sort of near-worthless land into soil that returns 6 to 7 tons of alfalfa per acre, 90 to 100 bushels of barley, 2½ bales of cotton, and 30 tons of corn silage per acre in response to his husbandry.

To match soil productivity improvements, Black has precision-leveled all 480 acres of cropland with power equipment so that there are few if any spots now where water must run downgrade more than a couple of inches in a field. There is practically no soil erosion. He has cut the length of irrigated rows to 800 feet or less. There's practically no water lost through deep seepage.

To guard water until it reaches crop rows, Black has installed 3½ miles of concrete ditch lining that averages 8 feet wide. He has installed hundreds of feet of underground pipelines and has built numerous concrete water-control structures. To supplement Rio Grande River water in recent years he has drilled several new wells.

But things weren't always this plush.

If it hadn't been for Robert B. Price, now president of an El Paso creamery company, Black might never have gotten a start. They



Concrete-lined irrigation ditch with check gates on the Price-Black farms.

Note:—The authors are respectively, information specialist, Denver, Colo., and clerk, Hatch, N. Mex., of the Soil Conservation Service.

became partners in the farm venture in 1933. Things were tough for Black in those days—as almost any dairyman can testify.

"The 35 roughneck cows were all I could risk at that time," Black recalls. But, as things got better, Black increased the pace. The present-day registered herd is the best measure of his progress.

One day recently, when 720 cows went through the tiled milk barn, over 10½ tons of milk flowed through the cooling tanks, or "Golden Guernsey," as the Price creamery folks call it a few hours later when it is ready for El Paso housewives.

Over the years, Black's outstanding farming record and progressive dairy management have been good business for the Price Creamery Company. Black credits Price with the assist that really mattered.

Black sought help in the early days of his land development job. And, he found it in the neighborly advice of oldtimers and in services that government agricultural agencies were offering. He took an early interest in the Caballo Soil Conservation District, helping with its organization in 1941. Later he served on its board from 1944-52.

When the district went into business Black looked up Dave Franzen, the SCS man assigned to help the district's farmers and ranchers. Before long Black had signed a district agreement plan and gone to work.

Black's first interests were flood channels and diversions to keep water off valuable land. He took the leadership on a pooling agreement that brought 11 farmers together to channel the Tierra Blanca Arroyo. Besides his time and money, he gave up 6 acres of land to see this project through.

Next, there were levees and jetties on the Sibley Arroyo, and then a job with neighbor C. L. Welch on a mile-long hillside diversion.

These supplemented the Montoya Channel job which was proving its worth under Black's sponsorship. Clearing, leveling, and other improvements followed throughout Black's community as more and more land was protected from the menace of floods.

When it came to conservation measures, Black drew no lines.

Sixteen years later he is still at it. And the farm is still expanding within itself. SCS engineers are planning the layout of additional bench leveling and irrigation ditches for 50

Harvesting silage on the Price-Black farms near Hatch, N. Mex.

A steel check gate in concrete-lined irrigation ditch that was designed and is being operated by Paul Black.

acres of newly cleared land. There are plans, too, for the fifth in a series of overnight irrigation reservoirs.

"Never leave a stone unturned when it comes to improvements," Black advises. Nothing points up that philosophy better than his pasture expansion. Today he has a 1,000-acre pasture spread to complement the cropland. Its development is a story in itself.

In addition to his land conservation measures Black has devised ways to use the byproducts of both dairy and farm. One of the most remarkable is his direct methods of fertilization.

Sluiceways bordering the stalls are drained through pipes to a sump tank. From there, the liquid manure is pumped into standby reservoirs to await delivery to the fields with the next irrigation water. Trucks work continuously hauling manure from the pens to the more distant fields. Mineral fertilizers add their bit on definite schedules.

The dairy is a well-managed wonder. Chopped alfalfa is fed green to the yard cows directly from the fields. Ensilage comes in from immense pit silos. Grains are ground and mixed with supplements in a sepcial feed mill. Normally there are as many as 10 different rations being prepared for the different classes of livestock Black has on hand at one time. Mill sweepings and excess milk from the fresh cow barn go to 100 pigs—kept just for that purpose.

To prove the superiority of a well-fed and well-bred herd, Black grooms show stock on the farm for county, state, and regional competition. He personally exhibits his senior herd sire, Adohr Pretor's Prospector, Grand Champion of both the Arizona and New Mexico State Guernsey shows. He is close by when cows and heifers are in the ring.

Extensive conservation measures and sound management of the dairy farm with its bountiful productivity of quality products has established a reputation for Black. Dairymen recognize his work.

Franzen, a 20-year veteran of Hatch Valley conservation, says, "When we want to show people operations and conservation measures, we take them to see what Paul Black has done.

Paul Black shows his senior herd sire, Adohr Pretor's Prospector.

Black and his associates are pointing out the kind of dairy leadership that is helping the whole industry. Price's Creameries, for example, started with one cow and a little red wagon for their deliveries. According to a recent announcement the southwestern Price system now employs 550 with an annual payroll of $2,250,000.

WHEEL-TRACK PLANTING.—About 200,000 acres of Wisconsin corn were planted by the wheel-track method in 1958, according to a soils specialist of the University of Wisconsin. This was about twice as much as was planted in the State the previous year.

FOREIGN VISITORS

By JOSEPH B. ROGERS

THE Soil Conservation Service assisted 212 technicians from 38 foreign countries in 1958. The visitors included 115 individuals and 13 groups comprising 97 persons.

The technicians traveled and observed SCS work in 27 States and in Hawaii and Puerto Rico. Twenty-five of them studied at five SCS training centers.

Among the groups were two teams from Japan, one studying soil and water conservation and the other irrigation; two livestock teams from Brazil; one team from the Soviet Union studying irrigation and drainage; and a group of governors from Turkey studying administration of agricultural programs.

Other countries represented were: Afghanistan, Belgian Congo, Bolivia, British Honduras, Ceylon, Chile, Colombia, Costa Rica, Cuba, El Salvador, Ghana, Great Britain, Greece, Guatemala, Honduras, India, Indonesia, Israel, Jamaica, Kenya, Korea, Lebanon, Malaya, Nicaragua, Pakistan, Peru, Philippines, N. Rhodesia, S. Rhodesia, Spain, Taiwan, Thailand, Trinidad, and Yugoslavia.

Busy SCS technicians sometimes fear that visitors to their work units will interfere with their schedule of work. But William W. Fox, work unit conservationist at Artesia, N. Mex., who was host to Ilhan Berkman, of Turkey, for 2 weeks this spring, did not find this to be true.

Note:—The author is training officer, Soil Conservation Service, Washington, D. C.

In the words of Bill Fox, "It was a genuine pleasure to have the 2 weeks of contact with Mr. Berkman. He and I were both saddened by the necessity of his departure because he had truly become a part of our SCS family and my personal family.

"We showed him and engaged him in all our program and social activities. Nearly every night we had him in our home or took him to other homes for supper. We did not use him as an exhibition piece here from a faraway country. He has a remarkable aptitude for fitting into any situation and was just one of us —not strange at all. He and his country are friends of our country. We tried and it was easy to show our true friendship for him.

"I dreaded his coming because of an anticipated disruption of our busy schedule. He didn't disrupt a thing, and I'm very glad he came here."

THE URBAN SPRAWL.—The Nation's soil and water resources in the future will be needed for more than providing our daily bread. The additional millions of people must have space to live and play, and must use our land and water for these purposes, too.

Extensive rural acreage is being taken over by factories, airports, highways, defense establishments, recreation fields, and housing developments. This leads to a complexity of problems relating to soil stabilization, sedimentation, drainage, sewage disposal, water pollution, tax adjustments, competition for water, and many others.

Land, whether in proving grounds or pasture, still has its conservation problems. The need for soil and water conservation on non-agricultural lands must not be neglected.

—D. A. WILLIAMS, *Administrator, Soil Conservation Service*